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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/734,005	12/10/2003	William G. Reeves	17,988	9405
23556	7590	05/26/2010		
KIMBERLY-CLARK WORLDWIDE, INC.			EXAMINER	
Tara Pohlkotte			LIGHTFOOT, ELENA TSOY	
2300 Winchester Rd.				
NEENAH, WI 54956			ART UNIT	PAPER NUMBER
			1715	
			MAIL DATE	DELIVERY MODE
			05/26/2010	PAPER

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/734,005
Filing Date: December 10, 2003
Appellant(s): REEVES ET AL.

Brian R. Rosiejka
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed on March 31, 2010 appealing from the Office action mailed on October 30, 2009.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,387,495	REEVES ET AL	5-2002
5,807,364	HANSEN	9-1998
2,680,731	MARTIN	6-1954

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 12, 14, 15, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reeves et al (US 6376011) in view of Hansen (US 5807364).

Reeves et al discloses a method of preparing a superabsorbent-containing composite, the method comprising introducing particles of superabsorbent material and particles of coating material into a flowing gas stream (See column 11, lines 18-22) wherein the particles of the coating material are porous particles or an agglomeration of particles (See column 8, lines 28-31) of e.g. cellulosic materials (See column 7, lines 47-68), the flowing gas stream moving the superabsorbent material and the coating material through a zone where an association agent is applied to the superabsorbent material and the coating material (See column 11, lines 31-34); and maintaining the superabsorbent material and the coating material in the flowing gas stream until the superabsorbent material is covered with at least a first layer of the coating material (See column 11, lines 34-53). Reeves et al teaches that with the use of an association agent the intimate association of a coating material with a superabsorbent material is achieved (See column 8, lines 34-37). The intimate association of the coating material with the superabsorbent material may be achieved via mechanical and/or *chemical bonding* (i.e. via crosslinking) (See column 8, lines 37-60). The selection of a particular association agent can be made by one skilled in the art and will typically depend upon the chemical composition of the materials to be maintained in intimate association with one another,

and desirably, the association agent should be non-toxic and non-irritating to humans to be suitable for use in applications involving human contact (See column 8, lines 61+). The association agent can be selected from the group consisting of **water**, volatile organic solvent, aqueous solution of film-forming materials, synthetic adhesive such as polyvinyl alcohol and **mixtures** thereof (See column 9, lines 11-18). The presence of **water in the association agent** is particularly effective in predisposing the superabsorbent material to wetting (See column 9, lines 18-20). In other words, *water* is preferably used together with polyvinyl alcohol. Note that polyvinyl alcohol is *polyhydric alcohol**.

(i) Reeves et al does not explicitly disclose polyvinyl alcohol is used for chemically bonding the coating material to the superabsorbent material.

(ii) Reeves et al also fails to teach that quaternary amine is used for chemically bonding the coating material to the superabsorbent material (Claim 12).

As to (i), However, Appellants specification (See Spec., page 8, line 11) describes that suitable **crosslinking** reagents include **polyhydric alcohol** and glycerol (which is also polyhydric alcohol). Also claim 12 recited **polyhydric alcohol** as a crosslinking reagent before Appellants had deleted *polyhydric alcohol* in claim 12 by amendment filed on 8/14/2009 to overcome Reeves et al. The amended claim 12 now recites as a crosslinking reagent glycerol, which is **polyhydric alcohol**. Thus, the current amended claim 12 requires moving the superabsorbent particles and the coating material through a zone where **water** as an association agent and glycerol (which is **polyhydric alcohol**) as a crosslinking reagent are applied to the superabsorbent

material and the coating material to produce crosslinked superabsorbent containing composite. As described above, Reeves et al discloses moving the superabsorbent particles and the coating material through a zone where **water** and polyvinyl alcohol (which is ***polyhydric alcohol***) are applied to the superabsorbent material and the coating material to achieve the intimate association of the coating material with the superabsorbent material via mechanical and/or *chemical bonding* (i.e. via crosslinking) (See column 8, lines 37-60). Therefore, the process of Reeves et al discloses all limitations of claim 12 before the amendment of 8/14/2009, and thus, is substantially identical to Appellants' claimed invention before the amendment of 8/14/2009.

Thus, water and polyvinyl alcohol of Reeves et al read on claimed association agent (water) and claimed crosslinking reagent (polyvinyl *polyhydric alcohol*), as required by claim 12, such that a step of adding a mixture water and polyvinyl alcohol to the flow stream reads on claimed step of simultaneously applying the association agent and the crosslinking reagent, as required by claim 23.

As to (ii), However, Hansen teaches that binders such as organic salts of a base including a ***cationic*** salt and an anionic species, e.g. **protonated** primary, secondary or **tertiary amines** (claimed quaternary amines) or deprotonated ***quarternary ammonium*** salts are suitable for binding *superabsorbent* particles to *cellulose* fibers by interacting ionically with functional groups on superabsorbent particles or cellulose fibers (See column 5, lines 46-58) to provide the particle-fiber bond of sufficient strength to withstand the usual handling that a particle-containing fibrous web undergoes during

transportation and during reprocessing for use in a finished product (See column 5, lines 1-8) such as diapers and sanitary napkins (See column 10, lines 16-20).

It is held that the selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in Sinclair & Carroll Co. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945). See MPEP 2144.07.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used protonated tertiary amines in Reeves et al instead of polyvinyl alcohol with the expectation of providing the desired chemically bonded superabsorbent particles and cellulose fibers of sufficient strength to withstand the usual handling, as taught by Hansen, since Reeves et al does not limit chemically bonding agents to particular compounds.

It is the Examiner's position that the superabsorbent-containing composite is claimed surface crosslinked superabsorbent-containing composite because it is produced by a process substantially identical to that of claimed invention.

As to claim 13, the flowing gas stream comprises air (See column 11, lines 22-23).

As to claims 15 and 18, fluidizing was continued as the temperature was raised. When the air outlet temperature equaled approximately 88°C, the run was considered complete and the superabsorbent-containing composite was bagged (See examples 1-7).

It is the Examiner's position that heating the flowing gas stream to an elevated temperature to 88°C would effect crosslinking on at least a portion of the surface of the superabsorbent-containing composite inherently.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

* US 2,680,731 to Martin is applied here as evidence that polyvinyl alcohol is *polyhydric alcohol* (See column 19, lines 53-54).

(10) Response to Argument

Appellants argue that claims 12, 14, 15, and 23 are not obvious over Reeves in view of Hansen.

Examiner Note

It is noted that U.S. Patent Publication 2005/0025794 to Wang et al. and U.S. Patent No. 4,301,312 to Feder et al. have been presented as evidence first time with the current Appeal Brief.

Appellants argue that a *prima facie* case of obviousness has not established because three basic criteria have not been met. Also absent articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.

(A) Appellants' claims 12, 14, 15 and 23 generally require the steps of introducing a coating material and introducing a superabsorbent material into a flowing gas stream, then moving the coating material and superabsorbent material through a zone where:

- 1) an association agent, and
- 2) a separate crosslinking reagent

are applied to the superabsorbent material and the coating material. The association agent is specifically selected from: water, volatile organic solvent, aqueous solution of film-forming material, synthetic adhesive and mixtures thereof. The crosslinking reagent is specifically selected from: ethyleneglycol diglycidyl ether, aluminum acetate, aluminum sulfate, glycerol, ethylene carbonate, quaternary amine, glycidyl compound, alkylene carbonates, silyl esters, tetramethoxy silane, and mixtures thereof.

Appellants respectfully disagree with the Examiner's position that "Reeves et al teaches that a mixture of water and a synthetic adhesive such as polyvinyl alcohol may be used as an association agent to achieve an intimate association (claimed crosslinking) of the coating material with the superabsorbent material via *mechanical and/or chemical bonding*," citing Reeves column 8 lines 34-60 and column 9 lines 11-17 for alleged support (Office Action dated October 30, 2009, page 2) (emphasis added by Examiner). It appears that the Examiner is attempting to equate the association agent of the present application with the crosslinking reagent of the present application. However, this position is untenable. For example, as stated above, the Examiner alleges that a mixture of water and a synthetic adhesive may be used as an association agent, and then without explanation parenthetically alleges that said association agent achieves the claimed crosslinking (Office Action dated October 30, 2009, page 2). Appellants respectfully note that the term "association agent" is defined by Reeves as the liquid or semi-liquid that facilitates the adherence of the coating material of Reeves with the superabsorbent material of Reeves (see e.g., Reeves column 8 lines 31-57). In contrast to Reeves, the present application not only requires an association agent, but also requires a crosslinking reagent. As defined in the present application, the term "crosslinking reagent" refers to a material for rendering the coating material more resistant to compression, and that such crosslinking reagent typically results in stiffening of the coating material (e.g., Specification page 8 lines 2-6). As Appellants best understand it, Reeves makes no reference at all to the use of a separate crosslinking reagent, which is in addition to the association agent. Furthermore, Reeves specifically discloses that both synthetic adhesives and water are "association agents" (e.g., Reeves column 9 lines 8-17).

The Examiner respectfully disagrees with this argument. As discussed above, *water and polyvinyl alcohol* of Reeves et al read on claimed association agent (water) and claimed crosslinking reagent (polyvinyl *polyhydric* alcohol), as required by claim 12, since the process of Reeves et al discloses all limitations of claim 12 *before* the amendment of 8/14/2009, and thus, is substantially identical to Appellants' claimed invention *before* the amendment of 8/14/2009. Therefore, it is irrelevant that Reeves et al uses terms for water and polyhydric alcohol that are different from terms of claim 12

as long as they are disclosed in Reeves et al to be used for the same purpose in substantially the same process as recited in claim 12.

(B) Appellants assert that the Examiner has not shown that the addition of Hansen overcomes the deficiency of Reeves. The Examiner adds Hansen for the alleged purpose of teaching that "binders such as protonated primary, secondary or tertiary amines (claimed quaternary amine) or deprotonated quaternary ammonium salts are suitable for binding superabsorbent particles to cellulose fibers..." (Office Action dated October 30, 2009, page 3) (emphasis added by Examiner). Thus, it appears that the Examiner is alleging that a protonated tertiary amine is the same as quaternary amine. However, the Examiner is incorrect, and has provided no evidence to support this position. In contrast, a quaternary amine is permanently charged and results in different pH values than a protonated tertiary amine, which involves acid dissociation relating to tertiary amines. For example, one patent application states the following:

[0049] With certain additives, such as iodine and iodophors, it is highly desirable to formulate a composition having a low pH, e.g., about 3 to about 5. Some conventional compositions attempt to use carboxylic acid functional polymers that may be protonated at these pH values and thus not ionized, however, these are not soluble. Unlike these materials, the polymers used in the compositions of the present invention rely upon amine groups which are permanently charged in the case of quaternary ammonium groups, protonated and thus cationic in the case of protonated tertiary amine groups, or nonionic and/or cationic in the case of amine oxide groups. For example, preferred amine oxide- containing polymers appear to be approximately 100% **protonated and thus positively charged** (emphasis added by the Examiner) at a pH of about 4. The quaternary ammonium and amine oxide groups are believed to contribute to stability over a broad pH range, e.g., about 2 to about 12. The tertiary amine groups are believed to contribute to composition stability over a pH range of about 2 to about 9.

(U.S. Patent Publication 2005/0025794 to Wang et al.; see also U.S. Patent No. 4,301,312 to Feder et al. for a further discussion of the acid dissociation of a protonated tertiary amine and its relation to tertiary amines, not quaternary amines).

The Examiner respectfully disagrees with this argument. First of all, Hansen expressly teaches that **protonated** primary, secondary or **tertiary amine** as well as deprotonated **quarternary ammonium** salt are **cationic** (i.e. permanently charged) salts (See column 5, lines 46-58).

Second, there is no need to provide any evidence by the Examiner because it is a common knowledge that *protonated tertiary amine* is permanently charged quaternary amine because: **proton is H⁺** (i.e. a **charged** hydrogen atom), and tertiary amine is a *non-charged* molecule, such that adding **charged** hydrogen atom to non-charged

molecule of tertiary amine will result in *charged* quaternary amine. In other words, a **protonated** tertiary amine is *charged* quaternary amine for the following reason: H^+ (proton) + NR_3 (tertiary amine) = R_3NH^+ . Note that *deprotonated* quaternary ammonium salt is also charged quaternary amine: H^+A^- (anion of an organic acid) + NR_3 (tertiary amine) = $R_3NH^+A^-$ (**deprotonated quaternary ammonium salt**).

Third, in contrast to Appellants assertion, paragraph [0049] of the U.S. Patent Publication 2005/0025794 to Wang et al is evidence supporting the Examiner's (not Appellants) position that a protonated tertiary amine is the same as permanently charged quaternary amine. The text of paragraph [0049]: "Some conventional compositions attempt to use carboxylic acid functional polymers that may be protonated at pH values 3-5 and thus not ionized, however, these are not soluble. Unlike these materials, the polymers used in the compositions of the present invention rely upon amine groups which are permanently charged in the case of quaternary ammonium groups, protonated and thus cationic in the case of **protonated tertiary amine groups**" may be interpreted only as stating that protonated carboxylic acids are *different* from protonated amine groups in that that unlike protonated carboxylic acid (i.e. R-COOH) that are not ionized at pH 3-5, protonated tertiary amine groups are cationic at pH 2-12, i.e. are permanently charged quaternary ammonium groups in wide range of pH.

Thus, Appellants themselves have provided the requested evidence supporting the Examiner's position.

(C) Appellants assert that even if arguendo, Hansen did disclose the tertiary amine crosslinking reagent (which Appellants deny), one of ordinary skill in the art would not make a combination that would add a crosslinking reagent to Reeves. In particular, Reeves is directed to forming an absorbent composite that can absorb viscoelastic complex fluids, such as menses. Since the crosslinking reagent has the effect of rendering the coating material more resistant to compression and stiffens the coating material, this would cause the invention of Reeves to be unsatisfactory for its intended purpose. According to MPEP § 2143.01(V), if the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification (In re

Gordon, 733 F.2d 900 (Fed. Cir. 1984). Thus, Reeves teaches away from the addition of crosslinking reagent.

The Examiner respectfully disagrees with this argument. First of all, Reeves teaches **chemically bonding** the superabsorbent material and the coating material using polyhydric alcohol just like Appellants invention, i.e. chemical bonding of Reeves reads on claimed crosslinking. Thus, Reeves teaches that chemically bonded (i.e. **crosslinked**) superabsorbent material/coating material is an absorbent composite that can absorb viscoelastic complex fluids, such as menses. Second, in contrast to Appellants' assertion, Hansen does teach that composites comprising superabsorbent material chemically interacted (i.e. crosslinked) with cellulosic fibers using quaternary amines (See column 5, lines 46-60) are capable of absorbing significant quantities of water and other fluids, such as urine and other **body fluids**. Such products include, but are not limited to, disposable diapers, sanitary napkins, incontinent pads, towels, bandages, medical wipes, and the like (See column 10, lines 12-20).

Reeves in view of Hansen have met three basic criteria: first, there is clear suggestion or motivation in Hansen to modify Reeves; second, there is a reasonable expectation of success; and finally, the prior art references when combined teach or suggest all the claim limitations. Therefore, the Examiner has properly established a prima facie case of obviousness.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Art Unit: 1715

Respectfully submitted,

/Elena Tsoy Lightfoot /

Primary Examiner, Art Unit 1715

Conferees:

/William A Krynski/

Supervisory Patent Examiner, Art Unit 1700

/Timothy H Meeks/

Supervisory Patent Examiner, Art Unit 1715